

LISTING OF CLAIMS:

1. (Currently amended) An apparatus for use as a charger utilizing ambient energy comprising
 - a plurality of stacked piezoelectric elements,
 - a rectification block on an output of each of said elements,
 - a plurality of capacitors arranged to accumulate charge from said rectification blocks, ~~and~~
 - a blocking diode provided at an output of said plurality of capacitors[[]], and
 - a signal phase delay element provided between said one or more of said rectification blocks and said plurality of capacitors.
2. (Original) The apparatus of claim 1, further comprising a charge storage device connected to an output of said blocking diode.
3. (Original) The apparatus of claim 1, wherein said rectification block is selected from the group consisting of a full-wave rectification block and a half-wave rectification block.
4. (Original) The apparatus of claim 1, comprising five or more stacked piezoelectric elements.
5. (Canceled)
6. (Currently amended) The apparatus of claim ~~5~~ 1, wherein said signal phase delay element comprises an inductor.
7. (Original) The apparatus of claim 2, wherein said charge storage device comprises a battery.
8. (Original) The apparatus of claim 2, wherein said charge storage device comprises a capacitor.
9. (Original) The apparatus of claim 1, wherein said apparatus is optimized for changes in ambient power from gravitational effects on a structure rotating at an angle to the surface of a significant gravity source.
10. (Original) The apparatus of claim 9, wherein said structure is a wheel.
11. (Original) The apparatus of claim 9, wherein said angle is approximately 90 degrees.
12. (Original) The apparatus of claim 9, wherein said gravity source is the earth.

13. (Original) The apparatus of claim 1, wherein said apparatus is optimized for changes in ambient power from a heartbeat.

14. (Original) The apparatus of claim 13, wherein said heartbeat is a human heartbeat.

15. (Original) The apparatus of claim 1, wherein said apparatus is optimized for changes in ambient power available from local electrical fields.

16. (Original) The apparatus of claim 15, wherein said electric field comprise a field in the approximate range of 50 to 60 Hz.

17. (Original) The apparatus of claim 1, wherein said apparatus is optimized for changes in ambient power available from low power sound energy.

18. (Original) The apparatus of claim 1, wherein said apparatus is optimized for changes in ambient power available from ultrasound energy.

19. (Original) The apparatus of claim 1, wherein said apparatus incorporates circuit board technology.

20. (Original) The apparatus of claim 19, wherein said capacitors are not discrete elements.

21. (Original) The apparatus of claim 1, wherein said apparatus is optimized for changes in ambient power available from RF spectrum energy fields.

22. (Original) The apparatus of claim 1, wherein said apparatus is optimized for changes in magnetic fields.

23. (Currently Amended) A method of manufacturing a charger utilizing ambient energy comprising

arranging a plurality of piezoelectric elements into a stack,
connecting a rectification block on an output of each of said elements,
arranging a plurality of capacitors to accumulate charge from said rectification blocks, ~~and~~
providing a blocking diode at an output of said plurality of capacitors[.], and
providing a signal phase delay element between said one or more of said
rectification blocks and said plurality of capacitors.

24. (Original) The method of claim 23, further comprising connecting a charge storage device to an output of said blocking diode.

25. (Original) The method of claim 23, wherein said step of arranging comprises providing said plurality of piezoelectric elements arranged in a stack according to size.

26. (Original) The method of claim 23, wherein said rectification block is selected from the group consisting of a full-wave rectification block and a half-wave rectification block.

27. (Original) The method of claim 23, comprising arranging five or more stacked piezoelectric elements.

28. (Canceled)

29. (Currently amended) The method of claim ~~28~~ 23, wherein said signal phase delay element comprises an inductor.

30. (Original) The method of claim 24, wherein said charge storage device comprises a battery.

31. (Original) The method of claim 24, wherein said charge storage device comprises a capacitor.

32. (Original) The method of claim 23, further comprising optimizing said charger for changes in ambient power from gravitational effects on a structure rotating at an angle to the surface of a significant gravity source.

33. (Original) The method of claim 32, wherein said structure is a wheel.

34. (Original) The method of claim 32, wherein said angle is approximately 90 degrees.

35. (Original) The method of claim 32, wherein said gravity source is the earth.

36. (Original) The method of claim 23, further comprising optimizing said charger for changes in ambient power from a heartbeat.

37. (Original) The method of claim 36, wherein said heartbeat is a human heartbeat.

38. (Original) The method of claim 23, further comprising optimizing said charger for changes in ambient power available from local electrical fields.

39. (Original) The method of claim 38, wherein said electric field comprises a field in the approximate range of 50 to 60 Hz.

40. (Original) The method of claim 23, further comprising optimizing said charger for changes in ambient power available from low power sound energy.

41. (Original) The method of claim 23, further comprising optimizing said charger for changes in ambient power available from ultrasound energy.

42. (Original) The method of claim 23, further comprising incorporating circuit board technology in said charger.

43. (Original) The method of claim 42, wherein said capacitors are not discrete elements.

44. (Original) The method of claim 23, further comprising optimizing said charger for changes in ambient power available from RF spectrum energy fields.

45. (Original) The method of claim 23, further comprising optimizing said charger for changes in magnetic fields.

46. (New) An apparatus for use as a charger utilizing ambient energy comprising
a plurality of stacked piezoelectric elements of different geometrical sizes stacked
from smallest to largest,
a rectification block on an output of each of said elements,
a plurality of capacitors arranged to accumulate charge from said rectification
blocks, and
a blocking diode provided at an output of said plurality of capacitors.

47. (New) The apparatus of claim 46, further comprising a charge storage device
connected to an output of said blocking diode.

48. (New) The apparatus of claim 46, wherein said rectification block is selected from the
group consisting of a full-wave rectification block and a half-wave rectification block.

49. (New) The apparatus of claim 46, comprising five or more stacked piezoelectric
elements.

50. (New) The apparatus of claim 46, further comprising a signal phase delay element
provided between said one or more of said rectification blocks and said plurality of capacitors.

51. (New) The apparatus of claim 46, wherein said signal phase delay element comprises
an inductor.

52. (New) The apparatus of claim 47, wherein said charge storage device comprises a
battery.

53. (New) The apparatus of claim 47, wherein said charge storage device comprises a
capacitor.

54. (New) The apparatus of claim 46, wherein said apparatus is optimized for changes in ambient power from gravitational effects on a structure rotating at an angle to the surface of a significant gravity source.

55. (New) The apparatus of claim 54, wherein said structure is a wheel.

56. (New) The apparatus of claim 54, wherein said angle is approximately 90 degrees.

57. (New) The apparatus of claim 54, wherein said gravity source is the earth.

58. (New) The apparatus of claim 46, wherein said apparatus is optimized for changes in ambient power from a heartbeat.

59. (New) The apparatus of claim 58, wherein said heartbeat is a human heartbeat.

60. (New) The apparatus of claim 46, wherein said apparatus is optimized for changes in ambient power available from local electrical fields.

61. (New) The apparatus of claim 60, wherein said electric field comprise a field in the approximate range of 50 to 60 Hz.

62. (New) The apparatus of claim 46, wherein said apparatus is optimized for changes in ambient power available from low power sound energy.

63. (New) The apparatus of claim 46, wherein said apparatus is optimized for changes in ambient power available from ultrasound energy.

64. (New) The apparatus of claim 46, wherein said apparatus incorporates circuit board technology.

65. (New) The apparatus of claim 64, wherein said capacitors are not discrete elements.

66. (New) The apparatus of claim 46, wherein said apparatus is optimized for changes in ambient power available from RF spectrum energy fields.

67. (New) The apparatus of claim 46, wherein said apparatus is optimized for changes in magnetic fields.

68. (New) A method of manufacturing a charger utilizing ambient energy comprising
arranging a plurality of piezoelectric elements of different geometrical sizes into a stack from largest to smallest,
connecting a rectification block on an output of each of said elements,
arranging a plurality of capacitors to accumulate charge from said rectification blocks, and

providing a blocking diode at an output of said plurality of capacitors.

69. (New) The method of claim 68, further comprising connecting a charge storage device to an output of said blocking diode.

70. (New) The method of claim 68, wherein said rectification block is selected from the group consisting of a full-wave rectification block and a half-wave rectification block.

71. (New) The method of claim 68, comprising arranging five or more stacked piezoelectric elements.

72. (New) The method of claim 68, further comprising providing a signal phase delay element between said one or more of said rectification blocks and said plurality of capacitors.

73. (New) The method of claim 72, wherein said signal phase delay element comprises an inductor.

74. (New) The method of claim 69, wherein said charge storage device comprises a battery.

75. (New) The method of claim 69, wherein said charge storage device comprises a capacitor.

76. (New) The method of claim 68, further comprising optimizing said charger for changes in ambient power from gravitational effects on a structure rotating at an angle to the surface of a significant gravity source.

77. (New) The method of claim 76, wherein said structure is a wheel.

78. (New) The method of claim 76, wherein said angle is approximately 90 degrees.

79. (New) The method of claim 76, wherein said gravity source is the earth.

80. (New) The method of claim 68, further comprising optimizing said charger for changes in ambient power from a heartbeat.

81. (New) The method of claim 80, wherein said heartbeat is a human heartbeat.

82. (New) The method of claim 68, further comprising optimizing said charger for changes in ambient power available from local electrical fields.

83. (New) The method of claim 82, wherein said electric field comprises a field in the approximate range of 50 to 60 Hz.

84. (New) The method of claim 68, further comprising optimizing said charger for changes in ambient power available from low power sound energy.

85. (New) The method of claim 68, further comprising optimizing said charger for changes in ambient power available from ultrasound energy.

86. (New) The method of claim 68, further comprising incorporating circuit board technology in said charger.

87. (New) The method of claim 86, wherein said capacitors are not discrete elements.

88. (New) The method of claim 68, further comprising optimizing said charger for changes in ambient power available from RF spectrum energy fields.

89. (New) The method of claim 68, further comprising optimizing said charger for changes in magnetic fields.